US009408995B2

(12) **United States Patent**
Ahearn et al.

(10) **Patent No.: US 9,408,995 B2**
(45) **Date of Patent: *Aug. 9, 2016**

(54) **NITROUS OXIDE ANESTHETIC ADMINISTRATION SYSTEM**

(71) Applicant: **David J Ahearn**, Little Compton, RI (US)

(72) Inventors: **David J. Ahearn**, Little Compton, RI (US); **Edward Carey**, Westport, MA (US)

(73) Assignee: **David J. Ahearn**, Little Copmton, RI (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **14/317,853**

(22) Filed: **Jun. 27, 2014**

(65) **Prior Publication Data**

US 2015/0075525 A1 Mar. 19, 2015

Related U.S. Application Data

(63) Continuation-in-part of application No. 13/681,509, filed on Nov. 20, 2012, now Pat. No. 8,794,233, which is a continuation of application No. 12/890,176, filed on Sep. 24, 2010, now Pat. No. 8,371,297, which is a continuation-in-part of application No. 12/567,729, filed on Sep. 25, 2009, now Pat. No. 8,360,058.

(60) Provisional application No. 61/840,419, filed on Jun. 27, 2013, provisional application No. 61/100,149, filed on Sep. 25, 2008.

(51) **Int. Cl.**

A61M 11/00	(2006.01)
A61M 16/12	(2006.01)
A61M 16/00	(2006.01)

(Continued)

(52) **U.S. Cl.**

CPC ***A61M 16/122*** (2014.02); ***A61M 16/0078*** (2013.01); ***A61M 16/01*** (2013.01); ***A61M 16/104*** (2013.01); ***A61M 16/202*** (2014.02); *A61M 16/009* (2013.01); *A61M 2016/003* (2013.01); *A61M 2202/0208* (2013.01); *A61M 2202/0283* (2013.01); *A61M 2205/18* (2013.01); *A61M 2205/3331* (2013.01);

(Continued)

(58) **Field of Classification Search**

USPC 128/203.28, 204.18, 204.23

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

340,778 A 4/1886 Gilbert
2,225,201 A 12/1940 Anderson

(Continued)

FOREIGN PATENT DOCUMENTS

EP 0584439 A1 2/1994

Primary Examiner — Steven Douglas

(74) *Attorney, Agent, or Firm* — Adler Pollock & Sheehan P.C.; Daniel J. Holmander, Esq.; George N. Chaclas, Esq.

(57) **ABSTRACT**

A system and method for administering nitrous oxide to a patient has a fluid control system that allows a user to monitor and control the supply of gases to a patient. A shutoff valve allows a user to selectively activate the fluid control system. Oxygen flow is adjusted by a flow controlling valve. A differential pressure regulator allows flow of nitrous oxide in response to sufficient oxygen flow. Flow of the nitrous oxide is further controlled by a ratio controlling valve. A display shows the flow of the gases through the fluid control system. A flush valve allows a user to flush the output with oxygen. A flow indicator light may be included. An optional output selector allows the user to direct the flow to one of various output ports. An optional safety scavenge valve prevents operation of the fluid control system when there is insufficient scavenge vacuum pressure.

16 Claims, 32 Drawing Sheets